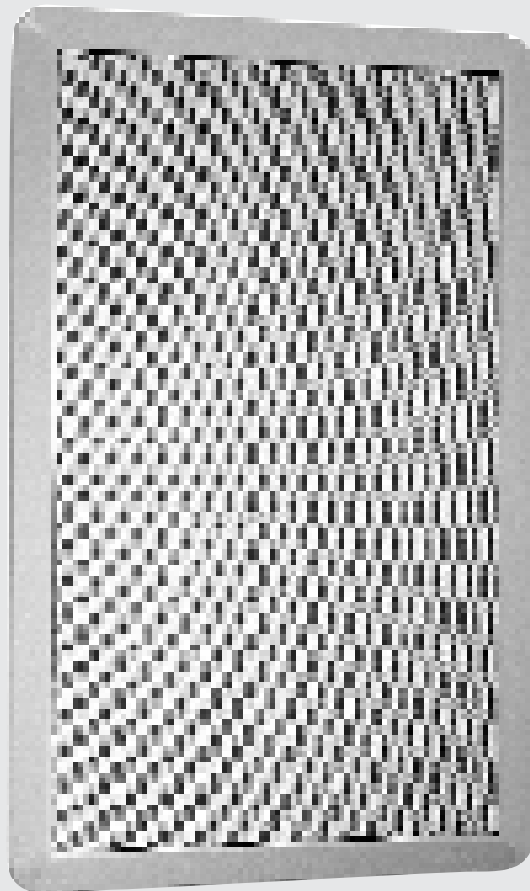


GENELEC®

Genelec AIW26
In-wall Speaker System

Installation and
Operating Manual



General

The Genelec AIW26 Active In-wall speaker system consists of a bass reflex type two-way speaker and a matched remote amplifier module, RAM1. It has been designed to the same rigorous standards as Genelec's high-performance HT series active Home Theater loudspeakers. No other in-wall loudspeaker can match the low distortion, neutrality and high sound pressure capability of Genelec AIW26. The AIW26 can be used in the most demanding applications, like the main L-C-R array of a Home Theater system, critical Stereo listening or rear/side channels of a large, state-of-the-art Home Theater.

Unpacking

A Genelec AIW26 set includes the following items. Check that nothing is missing or damaged in transit. If there is a problem with the product, contact your local Genelec dealer.

- AIW26 loudspeaker unit with two mounting brackets attached.
- Grill frame and grill insert (packed separately)
- AIW26 cardboard cut-out template
- RAM1 amplifier unit
- Cable binding post tool
- Mains power cable
- Six M6x60 Pozidrive 3 screws
- Plexiglass cover for the control switches
- This Operating Manual

Installation

Genelec recommends that you use the services of an authorized installation specialist or other competent and experienced installation company for the installation of the AIW26 system. Ask your local Genelec dealer for recommended installation companies in your region.

Matching speakers and amplifiers

Each AIW26 speaker unit has been factory calibrated for optimum performance with the RAM1 amplifier it is shipped with. Never mix these matched amplifier-speaker systems in the installation process. The matching units are marked with the same ID number on the reflex port of the AIW26 and the top panel of the RAM1.

Speaker placement

Genelec AIW26 speakers are equipped with Genelec's proprietary Directivity Control Waveguide™ (DCW™). One of the main characteristics of the DCW technology is that the speakers give a very even and consistent frequency response over a larger listening area than conventional loudspeakers. A secondary function of the DCW™ is to reduce the off-axis radiated sound energy, thereby minimizing the reflections from the side walls, floor and ceiling. This results in a precise and stable sound image

If the AIW26 speakers are used in an application where their capability for precise sound

imaging is needed, such as the front channels of a Surround Sound system or a Stereo system, we recommend that the speakers are placed as far away from corners or other walls and reflective surfaces as possible. The speakers should be placed symmetrically in relation to the listening position and there should be no obstructions between the speaker and the listener. This guarantees clear dialogue in films and a good stereo image with music. Figure 2 shows a Left-Center-Right arrangement that works well both as Surround Sound front channels and as a Stereo pair.

If you prefer a diffuse sound field, which is less critical to the listening position and gives only a vague sense of direction, for instance in a rear/side channel setup in a Home Theater system, you may actually benefit from the acoustical reflections from nearby boundaries. In this case, place the speakers close to the ceiling or another wall, or have them face away from the listening position, so that the proportion of reflected sound increases.

Choosing and installing the speaker cables

The RAM1 amplifier unit has separate power amplifiers for the tweeter and woofer. Accordingly, there are two pairs of binding posts, white (-) and red (+) for the tweeter and black (-) and grey (+) for the woofer. Be sure to maintain correct polarity when connecting the speaker cables and be extra careful not to mix the tweeter and woofer cables

Use a good quality 4-conductor cable and make the cable runs as short as possible.

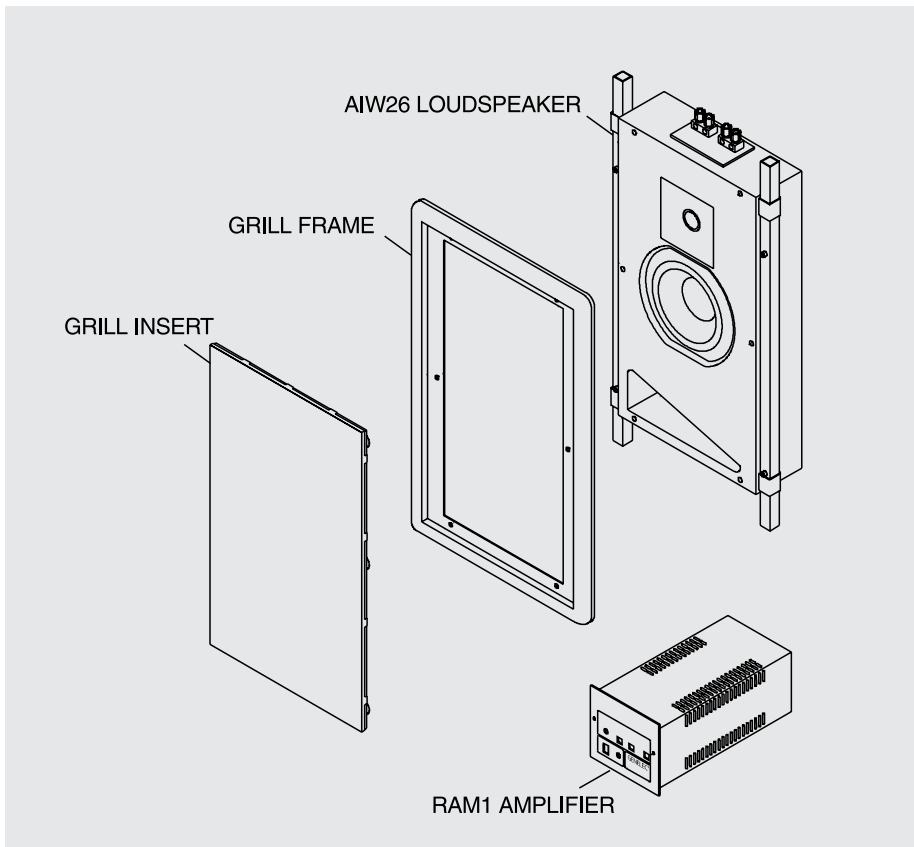


Figure 1. Main components of the AIW26 system.

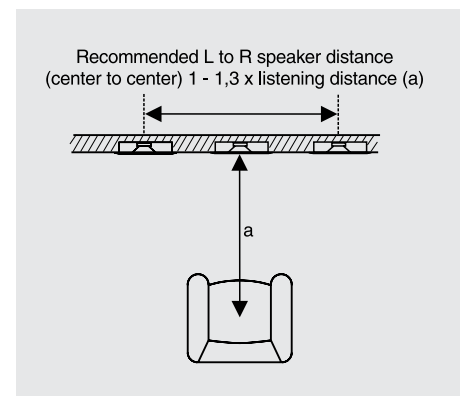


Figure 2. Symmetrical L-C-R speaker installation

Cable gauge	Max. length
2,0 mm ² (14 AWG)	30 m (100 ft)
3,3 mm ² (12 AWG)	40 m (131 ft)
5,3 mm ² (10 AWG)	60 m (200 ft)

Table 1. Recommended maximum lengths for speaker cables.

See Table 1 for recommended cable gauges. The binding posts accept a cable up to 6 mm² (9 gauge).

If you are installing the AIW26 system to an existing wall, examine the walls thoroughly for the shortest and least obstructed cable route. Be careful to avoid cutting or drilling into electrical wires, ventilation or water pipes. These are often visible in the attic, basement or crawl space below the floor. All of this is of course much easier when the installation takes place in an unfinished wall where the wall structure is still open. In both cases it is a good idea to route the speaker cables away from electric, video or phone cables, which might induce hum into the speaker system.

Painting the speakers

The speaker grill frame and the metal mesh part of the grill insert can be spray painted to match the wall colour. Do not paint the speaker cabinet itself, or try to paint the grill frame or grill insert while they are attached to the speaker. Remove the metal mesh from the grill insert to avoid clogging the grill insert cloth with paint. Paint the grill frame and metal mesh separately with a thin spray. Do not use brushes or rollers. Be very careful not to clog the holes on the mesh with paint.

Installing the AIW26 speaker unit

Use the cardboard wall cut-out template to find the location for the AIW26. The template also shows the position of the speaker drivers, so you can easily find the placement that brings them to the optimum position as outlined in chapter "Speaker placement".

Examine the wall structure carefully to find a clearly unobstructed location for the speaker. The speaker cabinet requires a minimum of 88 millimeters (3 1/2") of free depth behind the sheetrock. Keep in mind that the mount-

ing brackets of the AIW26 need a clearance inside the wall of at least 125 millimeters (5") above the top edge of the hole and 65 mm (2 9/16") below the lower edge. Also note that the grill frame is wider and taller than the hole and requires about 30 millimeters (1 3/16") of smooth wall surface around all sides of the hole.

When you have found a good location, check that the template is level and trace the hole onto the wall with a pencil along the outline of the template. If you are not sure that the chosen part of wall is free from obstructions, you can start by making a smaller hole at the center of the marked area through which you can probe the inside of the wall. Use a dry-wall saw and make the first cut at a 45° angle toward the center of the hole so you can put the cut piece back in if the location is unsuitable. If you find no obstructions, you can make the final cut along the marked lines.

If you have already connected the RAM1 amplifier units to the system, select the speaker that has the same ID number as the amplifier it will be driven by. Check the polarity of the speaker cables and attach the cables to the binding posts of the AIW26 speaker.

Lift the AIW26 into the hole top end (cable binding posts) first (see Figure 3) and push the lower end of the speaker onto the edge of the hole. Push both mounting brackets fully up and hold them there as you push the lower half of the speaker into the wall (see Figure 4). When the speaker is in the correct position, pull the mounting brackets down. If the wall cavity is deeper than 95 mm (3 3/4"), the speaker can drop into it. This can be avoided by mounting the speaker with the grill frame loosely attached. Screw the frame screws only half way in to allow some movement while installing the speaker.

Attach the grill frame to the speaker with six M6x60 Phillips screws provided with the kit (see Figure 5). As you tighten the screws evenly, the sheetrock will be clamped between the ends of the mounting brackets and the grill frame and the speaker will be firmly attached to the wall. **NOTE! Overtightening the screws will bend and damage the grill frame.** Keep a close look on the frame as you tighten the screws and stop when you see the metal base of the frame starting to bend.

The grill insert has magnets on one side to hold it onto the speaker's grill frame. Attach the insert on the speaker so that its cross-piece does not cover the drivers. Be very careful not to dent the grill frame if you have to remove the grill insert. Use a wide piece of wood or plastic to wedge the insert out.

Connecting the RAM1 amplifier

The RAM1 amplifier is designed to be connected to a line level output of a preamplifier, Surround Sound processor or other low level source. **NOTE! Never connect the RAM1 to a speaker level output of a power amplifier!** Before making the connections, check that the voltage selector on the amplifier's back panel is set to the correct voltage and the power on all components is turned off.

Start by connecting the speaker cables to the amplifier's binding posts (see Fig. 7). Check that the amplifier's serial number matches that of the AIW26 speaker unit which it will power. The number can be found on a sticker on the speaker's reflex port and on the amplifier's top cover. If the speakers are not yet installed, make a note of which amplifier is connected to each channel so you can find the correct AIW26 speaker unit for every amplifier. Check the cable polarity and use the provided cable binding post tool to tighten

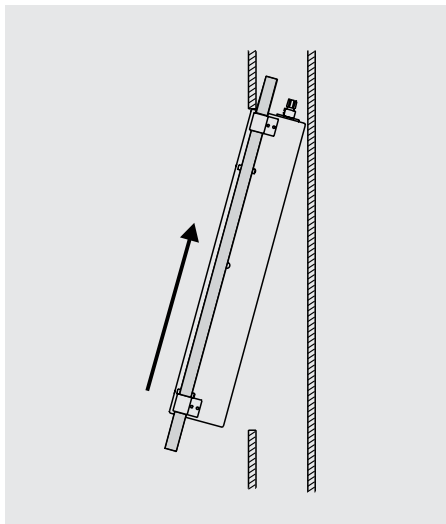


Figure 3. Lift the AIW26's top end into the cut-out

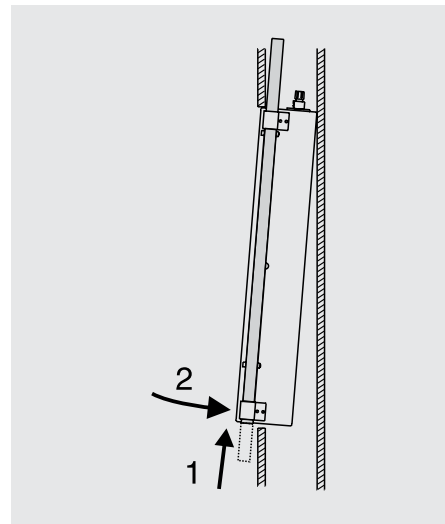


Figure 4. Lift the mounting brackets up and push the lower end of the speaker into the cut-out

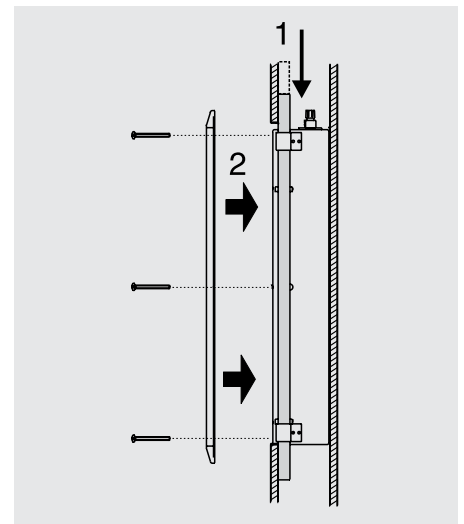


Figure 5. Pull the mounting brackets down and attach the grill frame

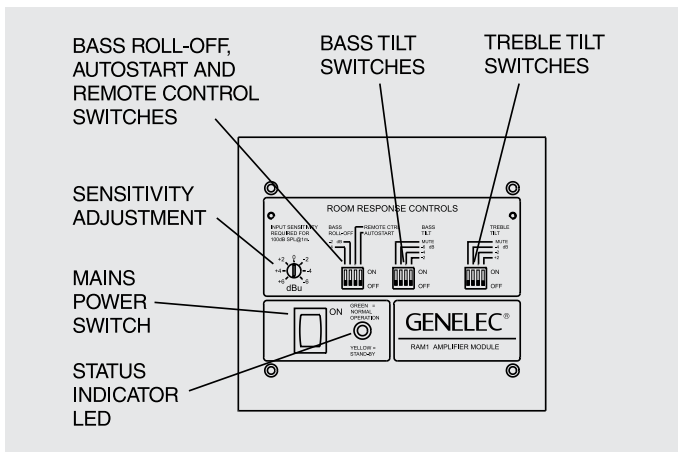


Figure 6. Front panel of the RAM1 amplifier

the binding posts. If you have lost the cable binding post then a large screwdriver will also work, but be careful not to overtighten the binding posts as they may be damaged.

The RAM1 has two parallel 10 kOhm input connectors: a balanced XLR and an unbalanced RCA. For longer cable connection lengths (>10m or >30ft) a balanced line connection is recommended as it offers better immunity to external interference. However, the RCA connection method is more commonly available and usually works as well for shorter connection lengths in less electrically noisy environments. Do not use both inputs at the same time. Consult your Genelec dealer for the choice of signal cables.

The RAM1 has a provision for remote controlled switching between “ON” and “STANDBY” modes. The “REMOTE CONTROL” connector block has two connector pairs: 1-2 for a 12 V DC trigger remote control and 3-4 for an external switch or relay type (contact closure) remote control (see Table 2). Do not connect two remote controls to the amplifier at the same time.

Space requirement for the RAM1 amplifier

The dual 120 W power amplifiers of a RAM1 unit generate a large amount of heat when used at full power. To avoid overheating, ensure that there is good airflow around the amplifier and no external heat sources close to it. We recommend installing the RAM1 into a well ventilated equipment rack using its dedicated RM1 rack mount kit.

If the RAM1 amplifier is placed in a cabinet, on a shelf or into an equipment rack without its dedicated RM1 rack mount kit, there must be at least 100 mm (4”) of free space behind, 150 mm (6”) above and 50 mm (2”) on both sides of the amplifier to ensure adequate cooling (see figure 8).

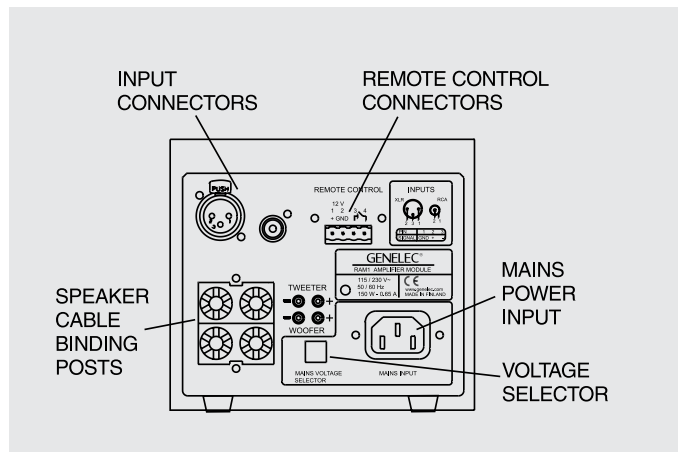


Figure 7. Rear panel of the RAM1 amplifier

Mounting the RAM1 amplifier to an equipment rack

We recommend that you use the Genelec RM1 rack mount kit when installing the RAM1 amplifier in an equipment rack. Make sure that the space above and below the RAM1 is uncluttered and there is a space of 100 mm (4”) or more behind the amplifier. The space behind the amplifier must be well ventilated. If the temperature inside the rack is likely to rise close to RAM1’s maximum ambient temperature of 35° C (95° F), we recommend installing ventilation fans to ensure that the thermal protection is not activated prematurely.

Attach the RAM1 to the RM1 rack mount with two M3 screws provided with the rack mount kit. The screws go through the holes on the RM1’s shelf plate (see Figure 9). Each RM1 can take three RAM1 units. Two blanking plates are provided to cover empty spaces in the rack if only one or two RAM1’s are installed.

Setting the input sensitivity

The input sensitivity of each speaker can be made to match that of the decoder or other source by use of the input sensitivity control on the amplifier’s front panel (see figure 6). A small screwdriver is needed for the adjustment. The manufacturer default setting for this control is -6 dBu (0.389V, fully clockwise) which gives SPL of 100 dB @ 1m with -6 dBu input level. Note that to get the full output level of 110 dB SPL, an input level of +4 dBu

(1.22V) is needed in this setting. Most pre-amplifiers are capable of this output level.

Setting the room response controls

The acoustic response of the system may have to be adjusted to match the acoustic environment and personal taste. See Table 3 for suggested room response control settings in differing acoustic environments. If the sound is found subjectively too bright, set

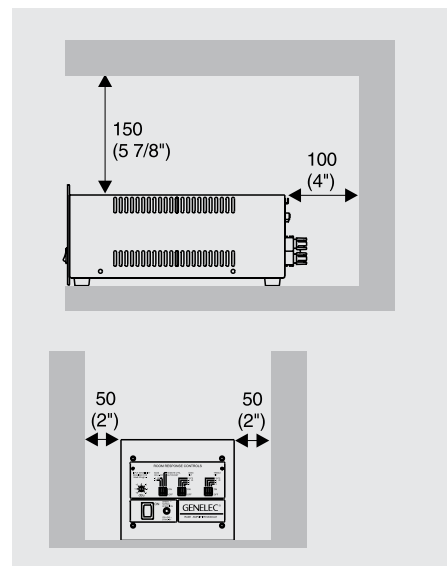


Figure 8. Minimum space requirement of the RAM1 amplifier when not installed with Genelec RM1 rack mount.

Remote control type	Pole or contact	Connect to remote control input pin no.
12 V DC remote control	+	1
	-	2
External switch or relay	Contact 1	3
	Contact 2	4
Connect only one remote control unit at a time		

Table 2. Remote control connectors on the RAM1.

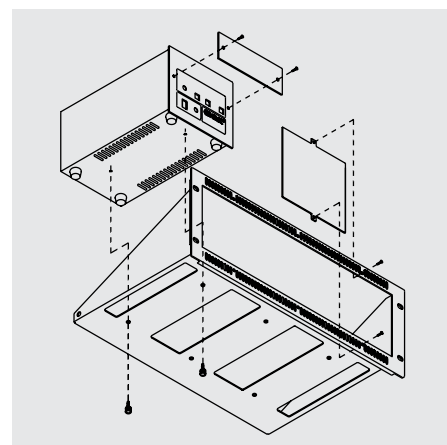


Figure 9. Attaching the RAM1 to Genelec RM1 rack mount

'treble tilt' to -2 dB, if too bass heavy, set 'bass tilt' to -2 dB. The adjustment is done by setting the three groups of room response control switches 'treble tilt', 'bass tilt' and 'bass roll-off' on the front panel of the amplifier. The manufacturer default settings for all controls are 'All Off' to give a flat response in half space, i.e. when the speaker has been installed in a wall. Always start adjustment by setting all switches to the 'OFF' position. Then set *only one* switch within each group to the 'ON' position to select the desired response curve. The switches are not cumulative. If more than one switch is set to 'ON' (within one switch group) the attenuation value is not accurate.

Using Autostart and Remote control functions

In daily use, the RAM1 amplifier can be switched to "STANDBY" mode to save energy by activating the signal sensing Autostart function or by using a remote control unit (not included in the AIW26 system). If the system is left unused for several days, we recommend that you power it down using the RAM1's main power switch or a central power switch if one has been installed.

The Autostart function is activated by turning switch 4 (AUTOSTART) on the first switch group to "ON". Autostart turns the amplifier to "STANDBY" mode if there is no signal present for about 30 minutes. When the signal returns the amplifier switches on immediately and the speaker functions normally.

If you are using a remote control to switch the RAM1 between "STANDBY" or "ON" modes (see chapter "Connecting the RAM1 amplifier"), turn switch 3 (REMOTE CONTROL), on the first switch group to "ON". This activates the remote control function. In this setting the remote control will override the Autostart function. If you want to use Autostart, turn the "REMOTE CONTROL" switch to "OFF".

Protecting the settings

The control group of the RAM1 can be cov-

ered with a piece of plexiglass to protect the settings. Attach the plexiglass over the switch groups with two Phillips screws when you have completed the adjustments. Do not overtighten the screws.

Status indicator LED

The status indicator LED on the RAM1 changes colour to indicate amplifier status. If the LED is yellow, it indicates that the amplifier is in "STANDBY" mode. When the amplifier is switched to "ON" mode, the LED changes to green colour.

Automatic protection circuits

The AIW26 system has protection circuits against speaker driver thermal overload and amplifier overheating. The protection system resets automatically so the user only has to turn the input level down to ensure that it does not reactivate.

Driver thermal overload protection protects the drivers from damage caused by prolonged overdriving with excessively high or distorted signal. The circuit automatically reduces the volume of the channel that is being overloaded. To avoid this, lower the listening volume if the sound becomes harsh and distorted at high sound pressure levels.

Amplifier thermal protection turns the amplifier to "STANDBY" mode if the amplifier overheats. Let the amplifier cool down and check that there is sufficient clearance around the amplifier for cooling (see chapters "Space requirement for the RAM1 amplifier" and "Mounting the RAM1 amplifier to an equipment rack" above). If the problem persists, consult your Genelec dealer or Home Theater Installation company for an improved cooling solution for your equipment cabinet or rack.

Maintenance

There are no user serviceable parts within the loudspeaker or the amplifier. Any maintenance or repair should only be undertaken by qualified service personnel.

Safety considerations

- Servicing and adjustment must only be performed by qualified service personnel. The loudspeaker or amplifier must not be opened.
- Do not use this product with an unearthed mains cable as this may compromise electrical safety.
- Do not expose the loudspeaker or the amplifier to water or moisture. Do not place any objects filled with liquid, such as vases, on or near them.
- Do not place naked flame sources like lighted candles on or near the loudspeaker or the amplifier.
- This loudspeaker is capable of producing sound pressure levels in excess of 85 dB, which may cause permanent hearing damage.
- Free flow of air around the amplifier is necessary to maintain sufficient cooling. Do not obstruct airflow around the amplifier.
- Note that the amplifier is not completely disconnected from the AC mains service unless the mains power cord is removed from the amplifier or the mains outlet.

WARNING!

This equipment is capable of delivering Sound Pressure Levels in excess of 85dB, which may cause permanent hearing damage.

Guarantee

This product is supplied with a two year guarantee against manufacturing faults or defects that might alter the performance of the unit. Refer to supplier for full sales and guarantee terms.

EC Declaration of Conformity

This is to certify that Genelec AIW26 I-wall Speaker System conforms to the following standards:

Safety:

EN 60065 / IEC 60065:1998 7th Edition

EMC:

EN 55013: (2001)

EN 55020: (1994), A11: (1996), A12: (1999),

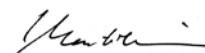
A13: (1999), A14: (1999)

EN 61000-3-2 (2000)

EN 61000-3-3 (1995)

The product herewith complies with the requirements of The Low Voltage Directive 73/23/EEC, EMC Directive 89/336/EEC and 93/68/EEC

Signed:



Ilpo Martikainen

Position: Managing Director

Date: 25-November-2004

	Bass Roll-Off	Bass Tilt	Treble Tilt
Half space factory default calibration setting	ALL OFF	ALL OFF	ALL OFF
Well damped (dead sounding) room	0 dB	0 dB	0 dB
Normal room	0 dB	0 dB	-2 dB
Highly reflective (live sounding) room	0 dB	-2 dB	-4 dB
Additional settings to compensate for the loudspeaker positioning within the room:			
In a double corner (wall/wall or wall/ceiling)	-2 dB	-2 dB	0 dB
In a triple corner (wall/wall/ceiling)	-4 dB	-4 dB	0 dB
If the speaker is positioned behind a perforated screen, add +2 dB to the Treble Tilt setting to compensate			

Table 3. Suggested room response control settings for differing acoustical environments

SYSTEM SPECIFICATIONS

AIW26 Speaker unit

Free field frequency response of system: 45 Hz...21kHz ($\pm 2,5$ dB)

Maximum short time sine wave acoustic output at 1 m on axis in half space, averaged from 100 Hz to 3 kHz: >110 dB SPL

Maximum peak acoustic output for a pair with music material: >120 dB SPL

Drivers

Bass: 182 mm (7")
 Treble: 19 mm ($\frac{3}{4}$ " metal dome)

Harmonic distortion at 90 dB SPL @ 1 m on axis:
 < 3% (50...200 Hz)
 < 0,5% (>200 Hz)

Weight including grill assembly: 10,7 kg (23,6 lbs)

Required cut-out dimensions

Height: 545 mm ($21\frac{1}{2}$ "*)
 Width: 334 mm ($13\frac{1}{8}$ "*)
 Depth: 88 mm ($3\frac{1}{2}$ "**)

*Note: The mounting brackets of the AIW26 need a clearance inside the wall of at least 125 millimeters (5") above the top edge of the cut-out and 65 mm ($2\frac{9}{16}$ ") below the lower edge.

RAM1 Amplifier unit

Bass amplifier output power: Short term 120 W
 Treble amplifier output power: Short term 120 W

Input impedance: 10 kOhm

Crossover frequency: 3.5 kHz

Treble tilt control in 2dB steps from +2 to -4dB & MUTE: @ 15 kHz
 Bass roll-off control in 2 dB steps from 0 to -6 dB: @ 50 Hz
 Bass tilt control in 2 dB steps from 0 to -6 dB & MUTE: @ 100 Hz

Mains voltage: 100/200V or 115/230V
 Power consumption (Standby / Idle / Full output): 5/10/200 W

Maximum ambient temperature 35°C (95°F)

Weight: 4,6 kg (10,1 lbs)

Dimensions

Height: 130 mm ($5\frac{1}{8}$ "*)
 Width: 145 mm ($5\frac{3}{4}$ "*)
 Depth: 309 mm ($12\frac{3}{16}$ "*)

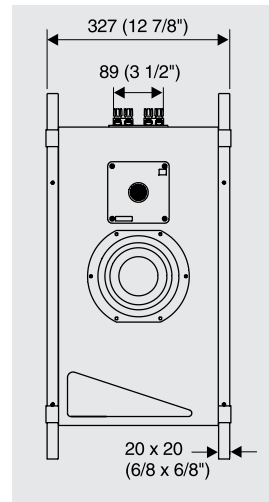


Figure 10. AIW26 front view

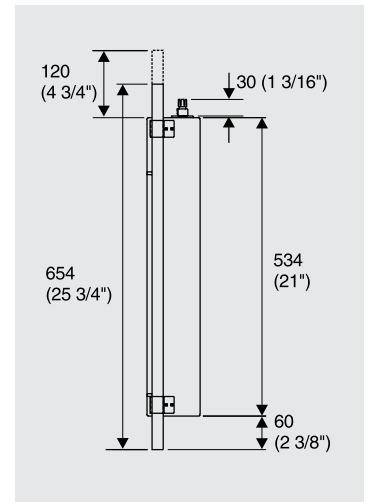


Figure 11. AIW26 side view

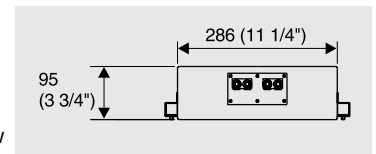


Figure 12. AIW26 top view

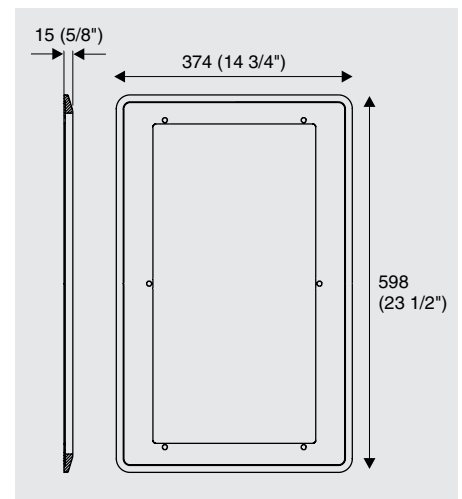


Figure 13. AIW26 grill frame side and front views

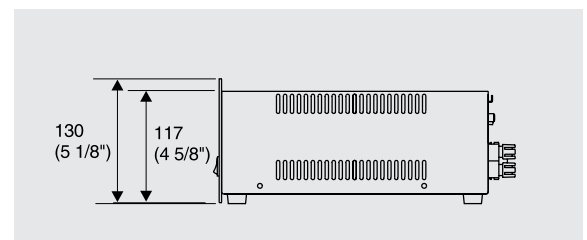


Figure 14. RAM1 side view

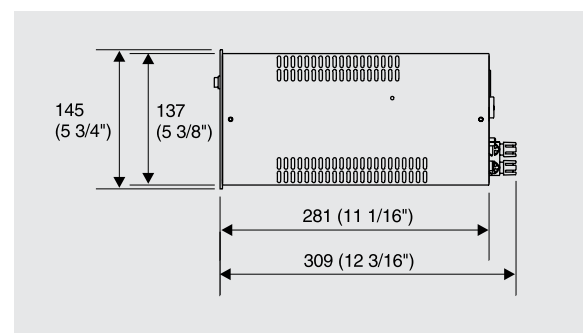


Figure 15. RAM1 top view

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